



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/586,602

07/20/2006

Yoshiyuki Muraoka

043890-0932

5740

53080 7590 06/24/2010  
MCDERMOTT WILL & EMERY LLP  
600 13TH STREET, NW  
WASHINGTON, DC 20005-3096

EXAMINER

ARCIERO, ADAM A

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/24/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

---

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/586,602  
Filing Date: July 20, 2006  
Appellant(s): MURAOKA ET AL.

---

Takashi Saito  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed March 29, 2010 appealing from the Office action mailed November 04, 2009.

Art Unit: 1795

**(1) Real Party in Interest**

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The following is a list of claims that are rejected and pending in the application:

Claims 3-4 are currently pending and have been rejected.

**(4) Status of Amendments After Final**

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

**(5) Summary of Claimed Subject Matter**

The examiner has no comment on the summary of claimed subject matter contained in the brief.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

**(7) Claims Appendix**

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

**(8) Evidence Relied Upon**

4943497	Oishi et al.	7-1990
6,387,564 B1	Yamashita et al.	5-2002
2004/0076882	Hosoya et al.	4-2004

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over OISHI et al. (US 4,943,497) in view of YAMASHITA et al. (US 6,387,564 B1) and HOSOYA et al. (US 2004/0076882).

Art Unit: 1795

As to Claim 3, OISHI et al. discloses a nonaqueous electrolyte secondary battery comprising a positive electrode comprising a mixture of two lithium complex oxides (col. 14, lines 30-43), a negative electrode comprising a material capable of doping and dedoping lithium ions (col. 10, line 66 to col. 11, line 2), a separator comprising a nonaqueous electrolyte impregnated therein (col. 1, lines 60-63). Furthermore, OISHI et al. discloses wherein said positive active material comprises one composite oxide represented by  $\text{Li}_x\text{Ni}_y\text{Co}_{1-y}\text{O}_2$  where  $0.2 \leq x \leq 1$  and  $0 < y < 0.5$  (col. 14, lines 44-46), and further comprising a second composite oxide such as a small amount of  $\text{LiMnO}_2$  (col. 14, lines 30-43). OISHI et al. further discloses wherein the added amount of the second composite oxide active material is 2-50 parts by weight of the total cathode active material (col. 10, lines 58-61). OISHI et al. does not specifically disclose wherein the amount of  $\text{LiMnO}_2$  as the second active material is added in an amount of 5-20% of the total active material. OISHI et al. further does not specifically disclose the first active material represented by composite "A" in claim 3 or the discharge-end voltages.

However, YAMASHITA et al. teaches a nonaqueous electrolyte battery comprising a positive active material of  $\text{Li}_x\text{Ni}_{1-y}\text{O}_2$  or  $\text{Li}_x\text{Co}_y\text{Ni}_{1-y}\text{O}_2$  wherein  $0 < x \leq 1.1$  and  $0 \leq y \leq 1$  (col. 8, lines 16-26). These ranges overlap or lie inside the claimed ranges of the present application. The courts have held that in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the active material of YAMASHITA et al. ( $\text{Li}_x\text{NiO}_2$ ) for the first active material of OISHI et al., because YAMASHITA et al. teaches that this will achieve a battery which is excellent in

Art Unit: 1795

discharging characteristics at a high current density and cycle characteristics (co.. 3, lines 1-2).

Furthermore, YAMASHITA et al. is clearly teaching that  $\text{Li}_x\text{NiO}_2$  and the active material formula disclosed by OISHI et al. used as positive active materials are considered functionally equivalent. Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the  $\text{Li}_x\text{NiO}_2$  active material of YAMASHITA et al. for the first active material of OISHI et al., because YAMASHITA et al. teaches that they are recognized equivalents.

HOSOYA et al teaches of a lithium-ion battery (nonaqueous electrolyte battery) comprising a negative electrode having an active material such as graphite which is capable to dope and dedope lithium (pg. 4, [0057]), a positive electrode having a positive active material of a first active material and a second active material of lithium transition metal oxides (pg. 4, [0046]), a nonaqueous electrolyte (pg. 4, [0039]) and a separator (pg. 4, [0039]). The second lithium transition metal oxide has an average discharge voltage of at least 0.05V or more than that of the first lithium transition metal oxide (pg. 2, [0018]) and the preferred amount of the second lithium transient metal oxide is in the range of 4-50% (pg. 9, [0124]). This prior art range encompasses the claimed range of 5-20%. The courts have held that in the case where “prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness.” *In re Peterson*, 315 F.3d 1325, 1330, 65 USPQ2d 1379, 1382-83 (Fed. Cir. 2003). Furthermore, HOSOYA et al. teaches the mixing ratio as being a results effective variable in that when the range is less than 4% it is difficult to sufficiently lower the cathode potential causing degradation of over-discharge resistance, and wherein second composite oxide material is greater than 50%, a discharge curve is shifted toward a low voltage side, and the battery becomes susceptible to lowering of battery capacity (pg. 9, [0124]). The courts have held that optimization of

Art Unit: 1795

a results effective variable is not novel. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Furthermore, it is the position of the Examiner that properties of the cathode active materials, such as the average discharge voltage of the first material compared to that of the second material and the discharge end voltage of the nonaqueous battery being within 2.5V to 3V, are inherent, given that the active materials disclosed by OISHI et al., YAMASHITA et al. and HOSOYA et al. and the present application have the same chemistry. Inherency is not established by probabilities or possibilities. *In re Robertson*, 49 USPQ2d 1949 (1999).

As to Claim 4, OISHI et al. does not expressly disclose the composition of the first active material expressed in claim 4.

However, YAMASHITA et al. teaches a nonaqueous electrolyte battery comprising a positive active material of  $\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$  wherein  $0 \leq y \leq 1$  (col. 8, lines 16-26). These ranges overlap or lie inside the claimed ranges of the present application. The courts have held that in the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to substitute the active material of YAMASHITA et al. ( $\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$ ) for the first active material of OISHI et al., because YAMASHITA et al. teaches that this will achieve a battery which is excellent in discharging characteristics at a high current density and cycle characteristics (co.. 3, lines 1-2). Furthermore, YAMASHITA et al. is clearly teaching that active materials for nonaqueous batteries such as  $\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$  and  $\text{Li}_x\text{NiO}_2$  are considered functionally equivalent. Therefore, at the time of the invention, it

Art Unit: 1795

would have been obvious to one of ordinary skill in the art to substitute the  $\text{Li}_x[\text{CoNi}]_{1-y}\text{Mn}_y\text{O}_2$  active material of YAMASHITA et al. for the first active material of OISHI et al., because YAMASHITA et al. teaches that they are recognized equivalents.

#### **(10) Response to Argument**

*Applicant's principal arguments are:*

*a) Appellant argues that the claimed range of Li amount of  $0.9 \leq x \leq 0.98$  in the first active material of the positive electrode exhibits unexpected results, as can be seen in Table 1 of the original specification (claim 3).*

In response to Applicant's arguments, please consider the following comments.

a) The Examiner has provided a proper combination of prior arts to reject the pending claims. The Applicant has chosen to not challenge the *prima facie* case created by the Examiner and has instead decided to challenge the secondary considerations of the claimed subject matter concerning unexpected results. Firstly, there is no clear indication for unexpected results for the claimed range of Li amount. Examples 3, 5-6 and 8 of the Applicant's disclosure appear to be the embodiments which read on independent claim 3 which show the results which Applicant claims as being unexpected. However, Examples 1-2, 7, 9-13 and comparison examples 1 and 3 shown in Table 1, also show the "unexpected results" for 100W discharge capacity which are the same if not larger than the claimed invention's embodiments (Examples 3, 5-6 and 8). Therefore the results are not shown to be consistently significant or unexpected. The Applicant must take into consideration all the variables which have an affect on the claimed invention (such as



Art Unit: 1795

compound of composite B and amount of composite B), not just the claimed range of the amount of Li. The amount of Li present in the positive active material's composite compound A is not the only critical element of the claimed subject matter. Furthermore, the Applicant's are comparing the claimed positive active material to a positive active material which is outside the Applicant's claimed invention. The showing of unexpected results in Table 1 is not commensurate with the prior arts combination for a positive active material. Applicant has not established the differences in results that are in fact unexpected and unobvious and of both statistical and practical significance. The burden is on Applicant to establish results that are unexpected and significant. See MPEP 716.02(a) and (b).

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Adam Arciero/

Patent Examiner, AU 1795

Conferees:

/Dah-Wei D. Yuan/

Supervisory Patent Examiner, Art Unit 1795

Application/Control Number: 10/586,602

Page 9

Art Unit: 1795

/Benjamin L. Utech/

Primary Examiner